

Government
Information
Technology
Agency

Statewide
STANDARD
P100-S103

TITLE: Applications and Related Software

Effective Date: December 18, 2002

1. AUTHORITY

The Government Information Technology Agency (GITA) shall develop, implement and maintain a coordinated statewide plan for information technology (A.R.S. § 41-3504(A (1))), including the adoption of statewide technical, coordination, and security standards (A.R.S. § 41-3504(A (1(a)))).

2. PURPOSE

The purpose of this standard is to provide guidance and direction for agency and State implementations of software applications that automate business processes.

3. SCOPE

This applies to all budget units. Budget unit is defined as a department, commission, board, institution or other agency of the State organization receiving, expending or disbursing state funds or incurring obligations of the State including the board of regents and the state board of directors for community colleges but excluding the universities under the jurisdiction of the board of regents and the community colleges under their respective jurisdictions and the legislative or judicial branches. A.R.S. § 41-3501(2).

The Budget Unit Chief Executive Officer (CEO), working in conjunction with the Budget Unit Chief Information Officer (CIO), shall be responsible for ensuring the effective implementation of Statewide Information Technology policies, standards, and procedures (PSPs) within each Agency.

4. STANDARD

The following software application standards provide for more effective sharing of resources and information among State agencies as well as interoperability with other governmental entities and the private business sector. Standards are also intended to encourage further deployment of systems enabling new business opportunities and providing new e-government solutions for delivering service.

- 4.1. **Approach:** Selection or development of software applications shall focus primarily on desired functionality and adaptability, driven by business requirements and rules. A foundation for interoperability and the sharing of information and resources is accomplished by aligning software applications with Statewide Information Technology Policy P100, which requires that agencies develop, acquire, or implement software applications and applications-related software that support open architecture, interoperability, portability, and scalability.

- 4.2. **Software Applications:** Software applications shall, where applicable, emphasize client (State employee, community of interest, public customer) productivity and performance enhancements and enablers (decision-making at the appropriate level) through self-service and self-administration. The underlying structure of the software applications may be n-tier or traditional, monolithic with browser (preferred) or GUI-based client access.
- 4.3. **Interoperability:** Software applications shall have the capability to securely exchange information and integrate or interoperate with other applicable or related software applications.
- 4.3.1. Software applications shall be deployed with the following:
- Platform independence or, at a minimum, pervasive, industry-wide, commonly used platforms, to facilitate integration and interoperability.
 - Non-proprietary technologies, wherever possible, to facilitate integration and interoperability.
 - Open and/or de-facto standard protocols and middleware technologies, without proprietary issues, requirements, custom programming, and intermediate interface-specific applications, wherever possible, to provide consistent methodologies and techniques to accomplish the sharing of information and to facilitate inter-application communications.
 - Common, proven, pervasive, and open software products (programming, database, and productivity software) to provide a consistent framework to enable integration, communication, and interoperability.
 - Open programming languages (C++, Java, Visual Basic, HTML, XHTML, XML, etc.), wherever possible, to provide consistent structure and format.
 - Open database connectivity and database middleware that use open database connectivity (SQL, ODBC, OLE DB, NDMP, NFS, CIFS, JDBC, etc.), wherever possible, to provide proven, pervasive technologies to share and exchange information.
- 4.3.2. n-tier-oriented software application architecture should be utilized, wherever possible, to facilitate platform independence and portability while offering the greatest potential for reuse and sharing of programming code.
- Software applications should use industry- or de facto standard application programming interfaces (APIs) such as Open API, OLE DB, etc., to insulate applications from the effects of platform, network, and database changes.
 - Software applications should use specifications such as CORBA, COM, DCOM, and ORB to provide for creating, distributing, and managing program objects and components in a networked environment.

- Software applications should assemble and integrate existing, common components, where practical, rather than creating custom code for software applications, to promote reuse and sharing of programming code.
- 4.3.3. Software applications should maximize the principles, recommended standards, and best practices delineated in the Target Network and Platform Architectures to provide widespread choice and flexibility for target database productivity, programming software, including middleware.
- Software applications should utilize target platform and network operating systems to allow for common, open-standards-based, management tools that are deployable across the State of Arizona Target Enterprise Architecture domains and their extension to management of applications.
 - Software applications should utilize target platform and network operating systems deployed with consistency of version and most current production release to increase interoperability and portability of software applications, programming, database, and utility software, and to reduce installation, support, and maintenance costs.
- 4.4. **Security:** Software applications should adhere to Statewide IT Security Policy P800 and related security standards to safeguard the State's information and resources and establish a more trusted environment for the citizens.
- 4.4.1. Security services associated with software applications, databases, and utility software should align with Statewide security standards, and
- Allow for the security controls for applications, platform, and network levels to be integrated to reduce or eliminate redundancies.
 - Support access, authentication, and authorization techniques as defined in the State of Arizona Target Security Architecture and related standards.
 - Allow for all security updates to be pushed to, or accepted by, all associated software products.
 - Allow for an integrated lightweight directory access protocol (LDAP) directory service.
- 4.5. **Intellectual Property:** All software shall conform to requirements in Statewide Intellectual Property Policy P252 to fully comply with all legal provisions governing copyright laws and authorial integrity.
- 4.6. **“As-Is” Software Application Assessment Ratings:** Given the dynamic nature of target software lifecycles and advances in the information technology industry, changes to the Arizona “As-Is” Software Application Assessment table are inevitable.

- When an agency plans to implement an application not included on the current Arizona “As-Is” Software Application Assessment table (shown in Attachment B), or programming/database software not included on the current Arizona “As-Is” Programming, Database, and Productivity Software Assessment table (Attachment C), the CIO shall submit a Target Software Application Architecture Assessment (Attachment A) to GITA, either in advance of or concurrent with the PIJ.
- Initial ratings of software applications shall come from the CIO of the agency responsible for the application.
- Changes to software application, programming software, or database software ratings shall come from the agency CIO responsible via submittal to GITA of a completed Target Software Application Architecture Assessment (Attachment A) for the application requiring change.
- Arizona’s State CIO in conjunction with the CIO Council shall have final approval of all software assessment ratings, whether conducted virtually or at a CIO Council meeting.

5. DEFINITIONS AND ABBREVIATIONS

- 5.1. Software Applications -- systems composed of programming, productivity, and database software, designed to automate and perform specific business functions such as payroll, accounts payable, vehicle registration, license renewal, etc.
- 5.2. Programming Software -- enabling technologies and products used to develop and maintain software applications, including programming languages (C++, Java™, HTML, COBOL, etc.), middleware, report writers, etc.
- 5.3. Database Software -- primarily database management systems used to organize and manage data storage, facilitate access to and provide security for, and assure the integrity of data stored in a database.
- 5.4. Utility Software -- typically an extension of a device’s operating system. Target Utility Software is classified as those necessary and appropriate software tools used to maintain and enhance target network and platform architectures, and more specifically, applicable device operating systems.
- 5.5. Refer to the PSP Glossary of Terms for other definitions and abbreviations.

6. REFERENCES

- 6.1. A. R. S. § 41-621 et seq., “Purchase of Insurance; coverage; limitations, exclusions; definitions.”
- 6.2. A. R. S. § 41-1335 ((A (6 & 7))), “State Agency Information.”
- 6.3. A. R. S. § 41-1339 (A), “Depository of State Archives.”
- 6.4. A. R. S. § 41-1461, “Definitions.”
- 6.5. A. R. S. § 41-1463, “Discrimination; unlawful practices; definition.”
- 6.6. A. R. S. § 41-1492 et seq., “Prohibition of Discrimination by Public Entities.”
- 6.7. A. R. S. § 41-2501 et seq., “Arizona Procurement Codes, Applicability.”
- 6.8. A. R. S. § 41-3501, “Definitions.”

- 6.9. A. R. S. § 41-3504, “Powers and Duties of the Agency.”
 - 6.10. A. R. S. § 41-3521, “Information Technology Authorization Committee; members; terms; duties; compensation; definition.”
 - 6.11. A. R. S. § 44-7041, “Governmental Electronic Records.”
 - 6.12. Arizona Administrative Code, Title 2, Chapter 7, “Department of Administration Finance Division, Purchasing Office.”
 - 6.13. Arizona Administrative Code, Title 2, Chapter 10, “Department of Administration Risk Management Section.”
 - 6.14. Arizona Administrative Code, Title 2, Chapter 18, “Government Information Technology Agency.”
 - 6.15. Statewide Information Technology Policy P100.
 - 6.16. Statewide Intellectual Property Policy P252
 - 6.17. Statewide IT Security Policy P800.
 - 6.18. State of Arizona Target Network Architecture,
http://gita.state.az.us/enterprise_architecture
 - 6.19. State of Arizona Target Security Architecture,
http://gita.state.az.us/enterprise_architecture
 - 6.20. State of Arizona Target Platform Architecture,
http://gita.state.az.us/enterprise_architecture
 - 6.21. State of Arizona Target Software Architecture,
http://gita.state.az.us/enterprise_architecture.
- 7. ATTACHMENTS**
- Attachment A – “Target Software Architecture Assessment”
- Attachment B – “State of Arizona ‘As-Is’ Software Application Assessment”
- Attachment C - “State of Arizona ‘As-Is’ Programming, Database, and Productivity Software Assessment”

ATTACHMENT A. TARGET SOFTWARE ARCHITECTURE ASSESSMENT

This assessment is an evaluative tool intended to determine the “readiness” level of interoperability, functionality, scalability, and adaptability of software relative to enabling new business opportunities and providing new e-government solutions for delivering service in the future. It is designed to support the planning and implementation of Target Software Architecture principles, recommended standards, and best practices. It addresses the alignment of the software applications and associated programming, database, productivity, and utility software proposed in a PIJ with Enterprise Architecture. It describes major attributes and characteristics derived from Statewide Information Technology Policy P100 and the principles and recommended standards and best practices contained in the Target Software Architecture.

Ratings for programming, database, and productivity software are based on the latest production release of the software. Utility software products used in conjunction with target network and platform architectures are considered target.

This assessment is applicable for all software reported to the Information Services Inventory System (ISIS) as defined by Statewide Configuration Management Standard P800-S815.

Score. Questions for the four (4) software categories are scored with one (1) point for a “Yes” answer and zero (0) for a “No” answer. **Maximum possible** is the total number of questions for each category.

Agency/Community of Interest: _____

Software Application Name: _____

Attributes/Characteristics	Maximum Possible	Score	Description
1. Functionality, scalability, and adaptability, emphasizing client interaction (Software Applications only)	5		Software Applications designed to fulfill business requirements and maximize the efficiency and effectiveness of business functions; able to scale and adapt as business requirements change and expand; that are interoperable, modular, and deployable across the State enterprise; and that support e-government and client self-sufficiency through browser-based access, regardless of location.
2. Platform independence and use of non-proprietary technologies	5		Addresses interoperability, portability, and integration across platforms utilizing open and/or de-facto standard protocols, programming languages, middleware, development tools, databases, utilities, etc.
3. Exchange of information, integration with other software	5		Utilizes common, standard interfaces and/or middleware having the ability to interoperate and integrate with other software without requiring custom programming or intermediate, interface-specific applications.
4. Ability to maximize (take full advantage of) Target Network, Security, and Platform Architectures	5		Has the capability to conform to, and adhere to, the standards and best practices delineated in the other domain architectures without requiring substantial modifications.
Total Rating Points	20/15		

Software when *italicized* in an assessment question encompasses all five (5) categories of Software Architecture, including:

1. Software Applications
2. Programming Software
3. Productivity Software
4. Database Software
5. Utility Software

Software Application Name: _____

<p>1. Functionality, scalability, and adaptability refer to software applications that have the ability to scale and adapt as business requirements change and expand; are interoperable, modular, and deployable across the State enterprise; and that emphasize e-government and client self-sufficiency through browser-based access, regardless of location. (Software Applications only)</p>	Yes
<p>1. Is the software application extensible (capable of being expanded or customized), adaptive (the adjustment or modification that makes something more fit given the conditions of its environment), and capable of accommodating increased demands for service without substantial modifications and additional costs?</p>	
<p>2. Is the software application developed and deployed utilizing open and/or de-facto standard protocols, languages, development tools, databases, etc.?</p>	
<p>3. Is a browser or GUI presentation layer available for the software application?</p>	
<p>4. Does the software application emulate the “look and feel” of the client device’s operating system and productivity software?</p>	
<p>5. Does the software application support e-government solutions and/or end user self-sufficiency or self-service?</p>	
<p>2. Platform independence and use of non-proprietary technologies addresses interoperability and portability across platforms utilizing open and/or de-facto standard protocols, programming languages, middleware, development tools, databases, utilities, etc.</p>	
<p>1. Is the <i>software</i>, as configured, portable, and accessible across platforms in use within the subject agencies or community of interest?</p>	
<p>2. Is the <i>software</i>, including version levels, consistent with current deployments of like or similar <i>software</i> within the subject agencies or community of interest?</p>	
<p>3. Is the <i>software</i>, as configured, platform independent, without proprietary issues and requirements?</p>	
<p>4. Is the <i>software</i> designed for, and/or supports, n-tier-oriented architecture deployment and implementation?</p>	
<p>5. Does the <i>software</i> allow for, or provide open and/or de-facto standard interfaces for, a variety of end-user client devices, server and storage platforms, and database products?</p>	
<p>3. Exchange of information, integration with other software emphasizes common standard interfaces and/or middleware having the ability to interoperate and integrate with other software without requiring custom programming and intermediate interface-specific applications.</p>	
<p>1. Does the <i>software</i>, as configured, provide for and/or support (directly or through extensions) the transparent transfer and exchange of information with other software products through open or de-facto industry standards?</p>	
<p>2. Does the <i>software</i> utilize target middleware technologies or open or de-facto industry standards for communicating and exchanging information with other software products?</p>	
<p>3. Does the <i>software</i> provide for and/or support the integration of, or interfacing with, productivity software currently deployed within the subject agencies or community of interest?</p>	
<p>4. Does the <i>software</i> provide the capability for sharing common software services and potential reuse of components?</p>	
<p>5. Is the <i>software</i>, as configured, unrestricted by any proprietary or vendor-specific integration requirements?</p>	
<p>4. Ability to maximize Target Network, Security, and Platform Architectures addresses the capability to conform to, and adhere to, the standards and best practices delineated in the other domain architectures, without requiring substantial modifications.</p>	
<p>1. Is the <i>software</i> capable of providing and/or supporting secure (as defined by the AZ EA Target Security Architecture) end-user interface access without substantial modifications, regardless of end-user location?</p>	
<p>2. Does the <i>software</i>, as configured, utilize target Network and Platform operating systems?</p>	
<p>3. Are the versions of the target Network and Platform operating systems utilized by the <i>software</i> consistent with current deployments within the subject agencies or community of interest?</p>	
<p>4. Do the security services included with the <i>software</i> align with Target Security Architecture and adhere with all security, confidentiality, and privacy policies as well as applicable statutes? If no security services are included, is the <i>software</i> unrestricted to align with Target Security Architecture?</p>	
<p>5. Is the <i>software</i> capable of being managed and maintained with standard SNMP-based management tools?</p>	
Total Rating Points	

ATTACHMENT B. STATE OF ARIZONA “AS-IS” SOFTWARE APPLICATION ASSESSMENT

Please refer to http://gita.state.az.us/enterprise_architecture/appendix B.pdf for latest “as-is” software applications listings.

**ATTACHMENT C - STATE OF ARIZONA “AS-IS” PROGRAMMING, DATABASE, AND
PRODUCTIVITY SOFTWARE ASSESSMENT**

Please refer to http://gita.state.az.us/enterprise_architecture/appendix C.pdf for latest “as-is” programming, database, and productivity software listings.